Please enter the following amendments:

In the Claims:

1. (Original) A method for etching quartz during manufacture of a semiconductor mask comprising:

providing a quartz mask, the quartz mask comprising a quartz substrate, a Cr layer overlying the quartz substrate, and a CrO_xN_y layer overlying the Cr layer, the Cr layer and CrO_xN_y layer forming a pattern by having openings formed therein for being transferred into the quartz substrate; and

etching the quartz mask in one of a nitrogen (N_2), hydro-fluorocarbon ($C_xH_yF_z$), and oxygen (O_2) based plasma and a nitrogen, fluorocarbon (C_xF_z), and oxygen based plasma to transfer the pattern into the quartz substrate, where x, y and z are integers.

2. (Original) The method of claim 1, wherein the fluorocarbon, C_xF_z, of the nitrogen, fluorocarbon and oxygen based plasma includes at least one selected from the group consisting of: C_2F_6, C_3F_6, C_4F_6, c-C_4F_8, C_5F_8, and the hydro-fluorocarbon, $C_xH_yF_z$, of the nitrogen, hydro-fluorocarbon and oxygen based plasma includes one selected from the group consisting of CHF_3, CH_3F and CH_2F_2.

3. (Original) The method of claim 1, wherein the quartz mask comprises a phase shift mask and wherein etching the pattern into the quartz substrate includes etching the quartz substrate to a depth that phase shifts light of a prescribed wavelength λ by 180 degrees relative to non-etched portions of the quartz substrate.

4. (Original) The method of claim 3, wherein the depth is substantially equal to the quantity lambda divided by the quantity of two times (n-1), that is, $\lambda/(2(n-1)$, where n is a reflective index of the quartz substrate at the wavelength λ.

5. (Original) The method of claim 1, wherein the quartz mask comprises a resist-less quartz mask.

6. (Original) The method of claim 1, wherein the quartz mask comprises a chromeless phase lithography mask.

7. (Original) The method of claim 1, wherein each of the nitrogen, hydro-fluorocarbon and oxygen based plasma and the nitrogen, fluorocarbon and oxygen based plasma comprises a substantially uniform plasma in response to presence of the nitrogen.

8. (Original) The method of claim 1, wherein a percentage of nitrogen is on an order of greater than or equal to 50%, a percentage of one of $C_xH_yF_z$ and C_xF_z is on an order of less than between thirty-five to forty-five percent (35%-45%), and a percentage of oxygen is on an order of less than between five to fifteen percent (5%-15%).

9. (Original) The method of claim 8, wherein increased plasma uniformity is rendered with an increase in nitrogen and a corresponding decrease in one of $C_xH_yF_z$ and C_xF_z.

10. (Original) The method of claim 9, wherein a corresponding plasma etch non-uniformity is less than 5%.

11. (Original) The method of claim 9, wherein the nitrogen contributes to plasma uniformity by reducing a concentration of negative ions over regions of the quartz mask.

12. (Original) The method of claim 1, further comprising controlling an etch rate of etching the quartz mask in response to a change in an effective bias power coupled to the nitrogen, hydro-fluorocarbon and oxygen based plasma or the nitrogen, fluorocarbon and oxygen based plasma.

13. (Original) The method of claim 12, wherein decreasing the effective bias power coupled to the nitrogen, hydro-fluorocarbon and oxygen based plasma or the nitrogen, fluorocarbon and oxygen based plasma decreases an etch rate of the quartz substrate etching.

14. (Original) The method of claim 13, wherein the nitrogen portion of each of the nitrogen, hydro-fluorocarbon and oxygen based plasma and the nitrogen, fluorocarbon and oxygen based plasma improves upon a sidewall profile of the patterned features.

15. (Original) The method of claim 1, wherein the nitrogen portion of each of the nitrogen, hydro-fluorocarbon and oxygen based plasma and the nitrogen, fluorocarbon and oxygen based plasma improves upon a sidewall profile of the patterned features.

16. (Original) The method of claim 1, wherein transferring the pattern into the quartz substrate includes transferring the pattern to a substantially uniform depth across the quartz substrate.

17. (Original) The method of claim 1, wherein nitrogen of each of the nitrogen (N_2), hydro-fluorocarbon ($C_xH_yF_z$), and oxygen (O_2) based plasma and the nitrogen, fluorocarbon (C_xF_z), and oxygen based plasma promotes more vertical patterned feature sidewalls by inhibiting excessive polymerization on the sidewalls of the patterned features.

18. (Original) The method of claim 17, wherein a resultant vertical profile of the patterned feature sidewalls is on an order of less than five degrees (5°) from vertical.

19. (Original) The method of claim 1, wherein etching the Cr and CrO_xN_y layers occurs at an etch rate sufficient to retain an integrity of the pattern being transferred to the quartz mask.

20. (Original) The method of claim 1 further comprising reducing faceting at corners of the Cr layer when etching the quartz substrate with one of a nitrogen (N_2), hydro-fluorocarbon ($C_xH_yF_z$), and oxygen (O_2) based plasma and a nitrogen (N_2), fluorocarbon (C_xF_z), and oxygen (O_2) based plasma.

Claim 21 (Canceled)

22. (Original) A method for manufacturing a semiconductor mask comprising:

providing a quartz mask, the quartz mask comprising a quartz substrate, a Cr layer overlying the quartz substrate, and a CrO_xN_y layer overlying the Cr layer, the Cr layer and CrO_xN_y layer comprising a pattern for being transferred into the underlying quartz substrate, where x and y are integers; and

etching the quartz substrate in a plasma containing a range of nitrogen (N_2) of substantially fifty percent or greater to transfer the pattern into the underlying quartz substrate, where the pattern forms openings in the quartz substrate having sidewall profiles on an order of substantially five degrees or less from a vertical reference.